

THE GENERA OF THE PIESTINAE OF  
AMERICA NORTH OF MEXICO  
(COLEOPTERA: STAPHYLINIDAE)<sup>1</sup>

Ian Moore and E. F. Legner<sup>2</sup>

Genera of the subfamily Piestinae have not been adequately characterized in the literature. The treatment which follows should make identifications of these genera simple for the first time.

Until recently most students included in this subfamily all staphylinids with small anterior coxae. Blackwelder (1942) reduced the size of the subfamily by removing those species which had unmargined abdomens. Moore (1963) added *Zalobius* and *Asemobius*, formerly placed in *Oxytelinae*.

Herman (1972) removed *Charhyphus* which is not followed here as explained in the note following the description of that genus.

The subfamily Piestinae may be briefly characterized as follows (Moore 1964): antennae eleven segmented, inserted at the front margins of the head near the eyes; second abdominal segment absent; third abdominal segment usually keeled between the coxae; abdomen with paratergites; anterior coxae small, globose or peg-shaped, usually not longer than wide.

This is a large subfamily of world wide distribution mostly in the tropics. Only a few of its members inhabit temperate zones. Many species are subcortical in habit and as a result are of depressed form. A few of the species which are found in leaf litter are of a less depressed form.

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<sup>1</sup>Accepted for publication: May 13, 1972.

<sup>2</sup>Staff Research Associate and Associate Professor of Biological Control, respectively. Division of Biological Control, Citrus Research Center and Agricultural Experiment Station, University of California, Riverside, California 92502.

# KEY TO THE GENERA OF THE PIESTINAE OF AMERICA NORTH OF MEXICO

1. Anterior tibiae not spinose externally ..... 2
- 1'. Anterior tibiae spinose externally ..... 5
- 2(1). Pronotum and elytra costate; last segment of maxillary palpi  
not narrower than penultimate ..... 3
- 2'. Pronotum and elytra not costate ..... 4
- 3(2). Gular sutures widely separated near base ..... *Asemobius* Horn
- 3'. Gular sutures very approximate near base ..... *Zalobius* LeConte
- 4(2'). Last segment of maxillary palpi not narrower than  
penultimate ..... *Trigonurus* Mulsant
- 4'. Last segment of maxillary palpi much narrower than  
penultimate ..... *Charhyphus* Sharp
- 5(1'). Elytral disc without impressed striae ..... *Hypotelus* Erichson
- 5'. Elytral disc with impressed striae ..... 6
- 6(5'). Clypeal area delimited by a deeply impressed line;  
mesosternum carinate ..... *Piestus* Gravenhorst
- 6'. Head without such a line; mesosternum not  
carinate ..... *Siagonium* Kirby & Spence

## *Asemobius* Horn

**Form:** Moderately stout, subfusiform, coarsely sculptured. The pronotum and elytra costate.

**Head:** Head subtriangular. Eyes large, convex, prominent. Antennae elongate; segments one and two thick, glabrous; three through seven long and slender, glabrous; eight through eleven thickened, forming a loose club, densely pubescent; their fossae located between the eyes and the bases of the mandibles. Clypeal area very small but delimited by a ridge. Labrum transverse, front margin arcuate, entire. Maxillary palpi four-segmented; first segment short; second about three times as long as wide, very slender in basal two-thirds, then slightly widened and somewhat bulbous in apical third; third about two-thirds as long as second, about three times as long as wide, widest at apex; fourth cylindrical, as long as and nearly as wide as second, gradually narrowed in apical third to the very narrowly truncate apex. Labial palpi three-segmented, last two segments of about equal length; third segment narrower than second, cylindrical. Gular sutures well separated, divergent behind. Infraorbital carina complete, very prominent.

**Thorax:** Pronotum nearly circular, the sides with eleven short, blunt teeth, surface irregular with vague, anostomic carinae, three posteriorly and two anteriorly. Prosternum large, very feebly longitudinally carinate, its process short and pointed. Epimera not delimited by a suture. Lateral prosternal suture distinct. Trochantin narrow, parallel sided. Metasternum long. Elytra quadrate; sides minutely serrulate; surface serially punctured and carinate; epipleura delimited by a strong carina. Scutellum small. Anterior coxae small, globose, contiguous. Posterior coxae small, triangular. Tibiae without spines. Tarsi five-segmented, with a few long setae. Anterior and middle tarsi with the first four segments short, robust, subequal, last segment about as long as the others together. Posterior tarsi longer and more slender; the first three segments of about equal length, about twice as long as wide; fourth about as wide, but only half as long; fifth about as wide and as long as the first three together.

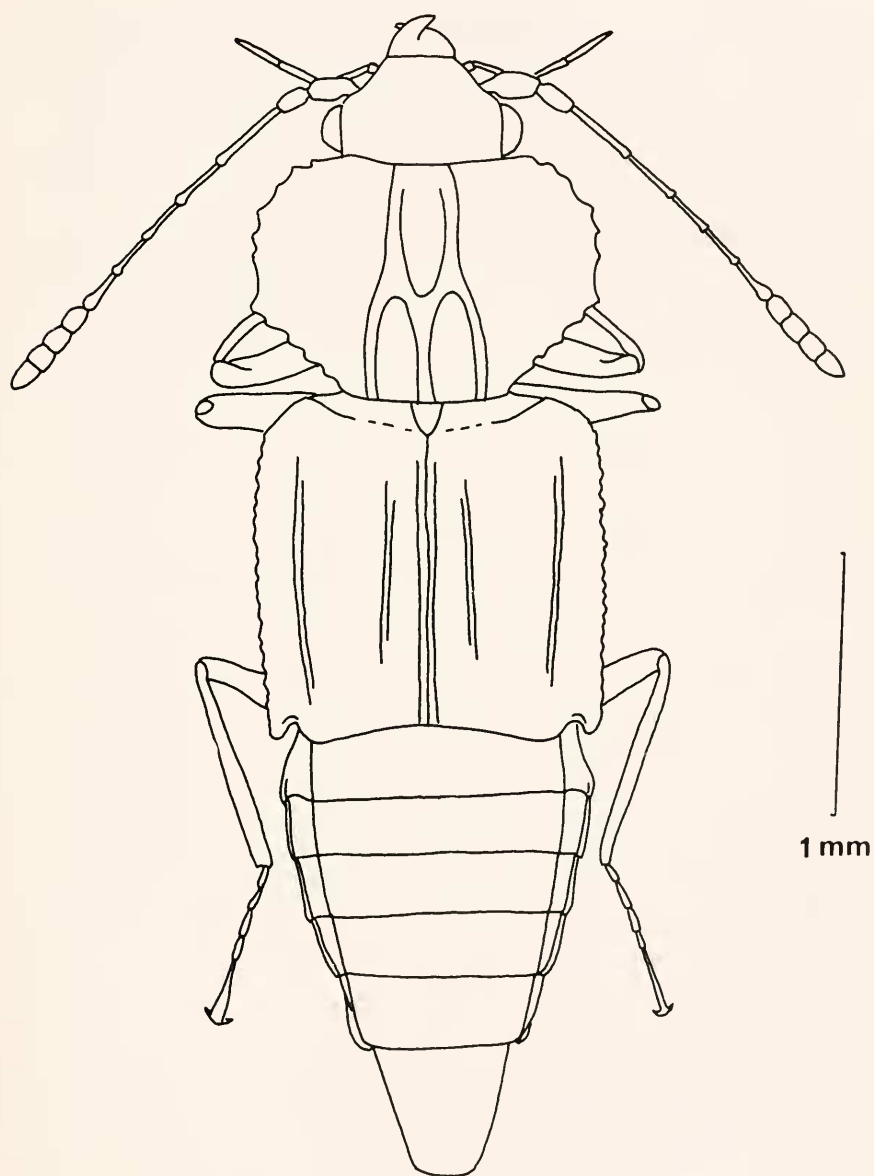


Figure 1: *Asemobius caelatus* Horn.

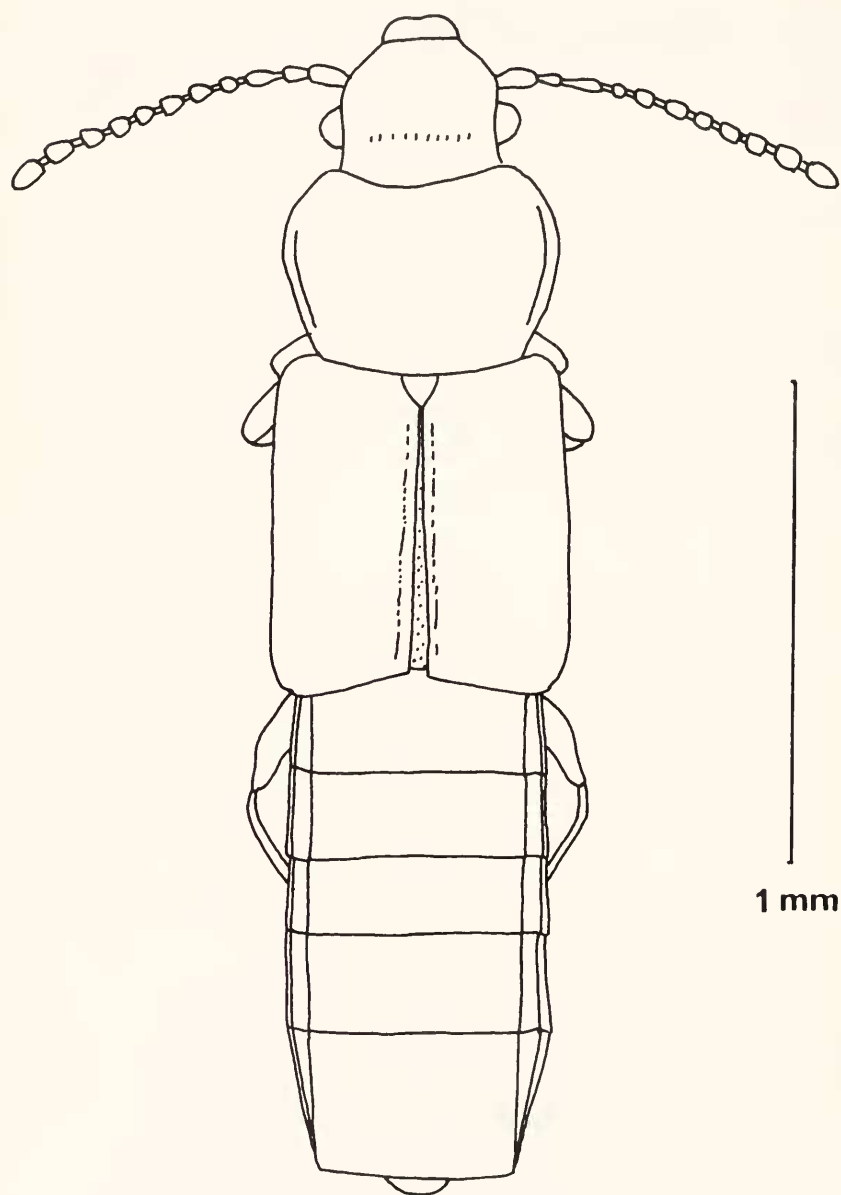


Figure 2: *Hypotelus pusillus* Erichson (Brazil)

*Abdomen:* First five visible segments with paratergites. First visible sternite with a small keel between the coxae; first two visible sternites vaguely constricted at base. Last sternite of the only specimen seen emarginate and impressed, and so apparently a male.

*Distribution:* The single species, *Asemobius caelatus* Horn, was described from a single specimen from California. Another specimen from Washington is in the collection of the California Academy of Sciences.

*Notes:* This genus has previously been placed in the Oxytelinae, but along with *Zalobius*, was removed to the Piestinae by Moore (1963). This genus can easily be recognized by its subcircular, crenulate pronotum and rough sculpture, as well as by its slender antennae with the last four segments forming a contrastingly pubescent club. It is remarkable in this group by the strong infraorbital carina.

The only species is apparently quite rare, the only specimens known to us being the two previously mentioned. The above description was taken from the specimen from Washington. It is the specimen described and figured by Hatch (1957). We have been unable to give a more complete description for lack of a specimen for dissection. Horn (1895) stated that the head is abruptly narrowed behind to form a neck, and that the middle coxae are separate, characters not visible in the specimen we have seen.

The shape of the head and the pronotum of the specimen from Washington differ considerably from the figure presented by Horn of the California specimen. Either Horn's illustration is inaccurate, or the Washington specimen belongs to another species. Judging from similar discrepancies in Horn's illustrations of *Zalobius serricollis* and *Z. spinicollis* the former seems more likely.

#### Hypotelus Erichson

*Form:* Small, linear, slightly depressed, shining.

*Head:* Head nearly as large as pronotum, subquadrate, not narrowed behind to a neck. Eyes of moderate size, very prominent. Antennae incassate; the first four segments glabrous, the remainder densely pubescent; their fossae located under a ridge between the eyes and the bases of the mandibles. The first antennal segment of the male often with a small, internal tooth at apical margin. Clypeal area not delimited. Labrum transverse with the entire apex evenly, deeply emarginate, the outer angles rounded; apex furnished with a fine, membranous border and ten or twelve strong setae. Mandibles short, stout, simple. Maxillary palpi four-segmented; first segment short; second longer than wide, much wider at apex; third transverse, as wide as second; fourth as wide as third, twice as long as wide, very little narrowed to the rounded apex. Inner lobe of maxilla shorter than outer, membranous and ciliate at apex. Outer lobe wider than inner with a dense brush of cilia at apex. Labial palpi three-segmented, the first two segments short and stout; the third a little narrower, cylindrical, about twice as long as wide. Gular suture united or extremely approximate. Infraorbital carina lacking.

*Thorax:* Pronotum narrowed behind. Prosternum well-developed, its process very short, rounded. Lateral prosternal suture distinct. Prosternal epimera not delimited by a suture. Trochantin large, quadrate, divided longitudinally by a strong carina. Mesosternum short, its process narrow, pointed, extending three-fourths of the distance between the coxae where it meets the broad, pointed process of the metasternum. Metasternum large. Elytra quadrate, epipleuron delimited by a carina. Anterior coxae small, globose, contiguous. Middle coxae larger, globose, narrowly separated. Posterior coxae small, triangular. Anterior and middle tibiae with a double row of spines externally, posterior tibiae with a few spines near apex. Tarsi five-segmented, the first four segments short and subequal, the last about as long as the first four together.

**Abdomen:** First five visible segments with paratergites. Tergites not impressed. First visible sternite with a small keel between the coxae. External sexual differences feeble.

**Distribution:** Nine species have been described in this neotropical genus. In the United States a Mexican species has been recorded from Texas.

**Notes:** The above description was taken from *Hypotelus pusillus* Erichson from Brazil, as we have seen no North American specimens. This genus is closely related to *Piestus*. The denticle on the inner margin of the first antennal segment of the male is lacking or much reduced in some species.

#### **Piestus** Gravenhorst

**Form:** Moderately robust, subparallel, shining.

**Head:** Head somewhat smaller than pronotum, not narrowed behind the eyes, without a neck. Eyes of moderate size, extremely prominent. Antennae elongate, not incrassate; the first segment in the males of some species with a brush of long hair on the inner side; their fossae located under a distinct ridge between the eyes and the bases of the mandibles. Clypeal area distinctly set off by a strongly impressed arcuate line. Labrum transverse, the entire apex evenly and deeply emarginate, the outer angles rounded, outer margin furnished with eight or ten strong setae. Mandibles stout, simple. Maxillary palpi four-segmented; the first segment short; second longer than wide, stout at apex; third about as wide as long, as wide as second; fourth as wide as third, about twice as long as wide, subcylindrical, slightly narrowed to the rounded apex. Inner lobe of maxilla shorter than outer, membranous and ciliate internally. Outer lobe wider and longer than inner, with a brush of dense setae at tip. Ligula transverse, emarginate, membranous. Labial palpi three-segmented, segments of equal width, first and third each about twice as long as wide, second about as long as wide. Gular sutures indistinct, united. Infraorbital carina lacking.

**Thorax:** Prosternum well-developed, its process acute, short. Lateral prosternal suture distinct. Prosternal epimera not delimited but a suture. Trochantin large, quadrate, divided by a carina. Mesosternum short, longitudinally carinate, its process long, slender, acute, extending three-fourths the distance between the coxae, where it meets the short, bluntly pointed process of the metasternum. Metasternum long. Anterior coxae small, globose, contiguous. Middle coxae larger, somewhat exserted, narrowly separated. Posterior coxae small, triangular. Tibiae spinose externally, the anterior with a large, internal apical spur. Anterior femora excavated internally near apex, anterior tibia with a pubescent tumidity internally near base so that when these two parts are brought together they fit each other. Tarsi five-segmented, first four segments short and subequal, last about as long as the others together.

**Abdomen:** First five visible segments with paratergites, tergites not impressed. First visible sternite with a small keel between the coxae. External sexual characters lacking.

**Distribution:** This is a strictly neotropical genus with 48 known species. A single Mexican species, *Piestus extimus* Sharp, is recorded from Arizona.

**Notes:** The above description was taken from *Piestus pygmaeus* Laporte from Brazil. The carinate mesosternum is unusual in this subfamily.

#### **Siagonium** Kirby & Spence

**Form:** Moderate sized, depressed, parallel, shining.

**Head:** Head large, somewhat transverse and slightly narrowed behind the eyes, with-

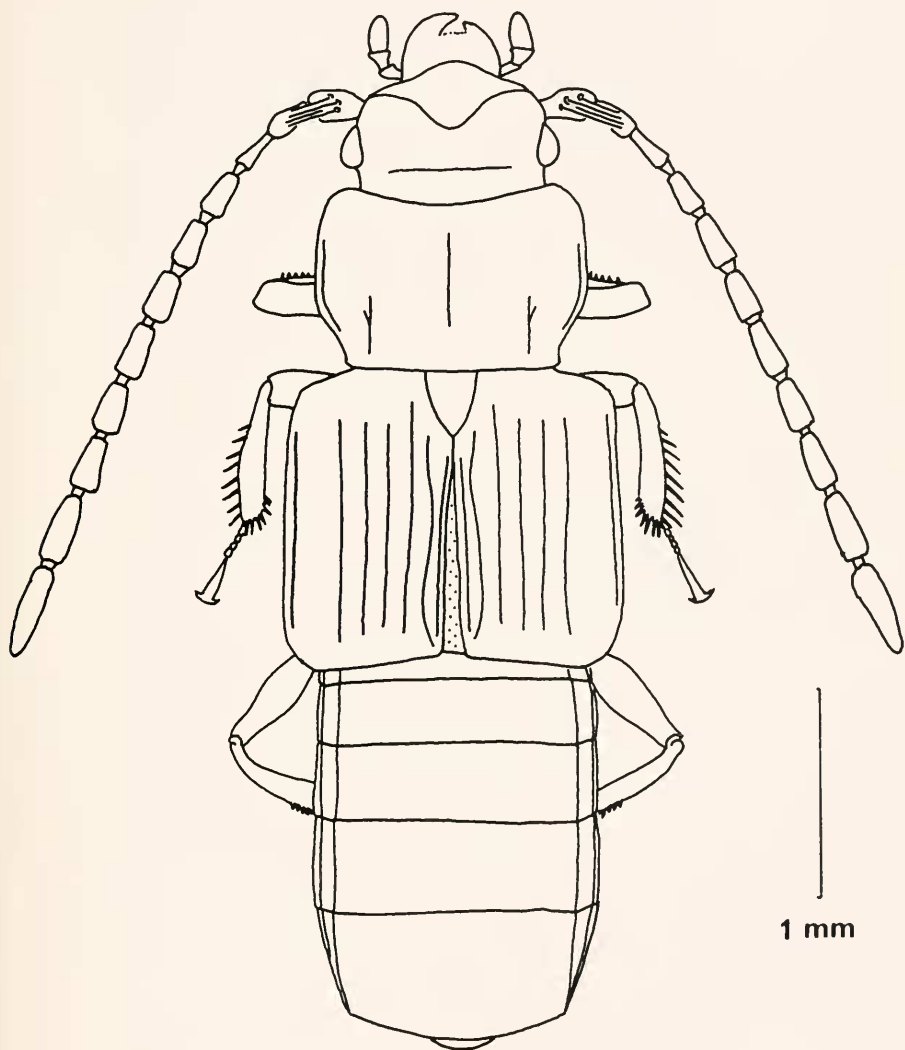


Figure 3: *Piestus pygmaeus* Laporte (Brazil)

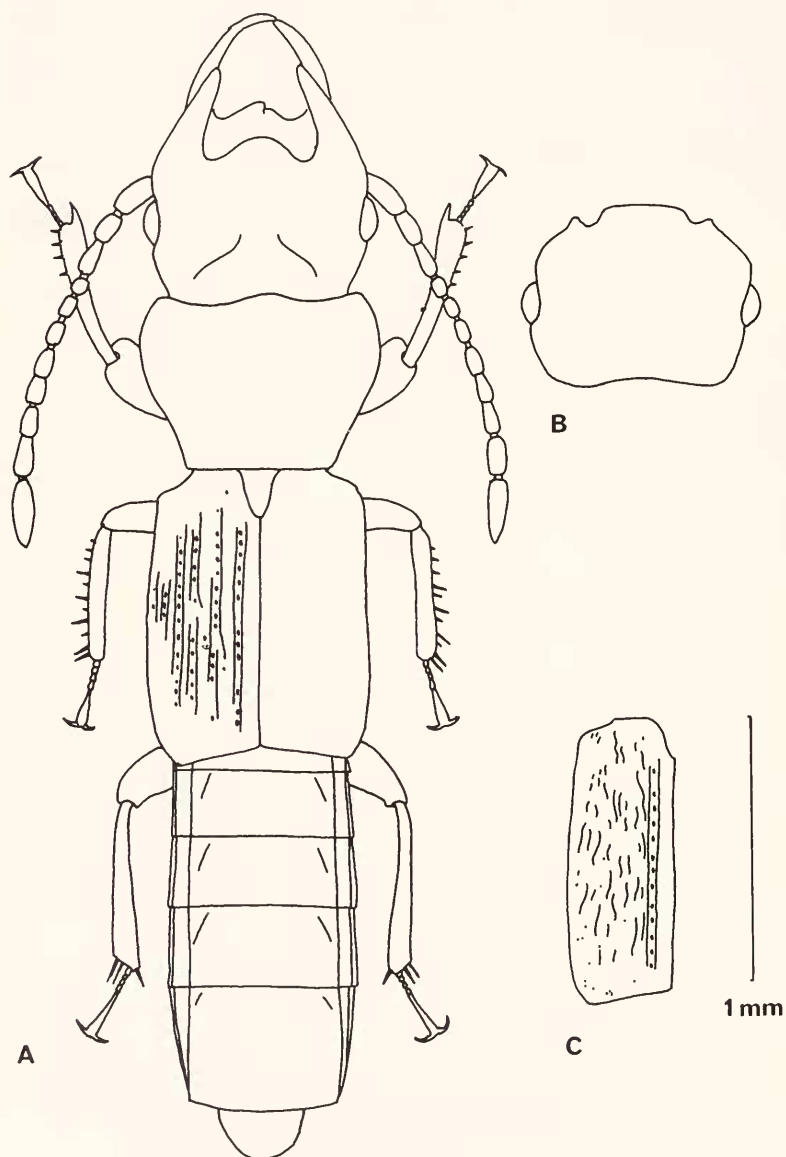


Figure 4A: *Siagonium punctatum* LeConte, Male

Figure 4B: *S. punctatum* LeConte, head of female

Figure 4C: *S. americanum* Melsheimer, left elytron



out a nuchal constriction; in the males, above the antennal insertions, often with a forward directed horn on each side, which differs greatly in amount of development among the individuals. Eyes moderate in size, prominent. Antennae elongate, their fossae located between the bases of the mandibles and the eyes under a distinct prominence of the front of the head. Labrum transverse, emarginate in front. Mandibles prominent, the left with a large, central, internal tooth, sometimes with two to four small teeth; in the males, with a large external forwardly directed tooth. Maxillary palpi four-segmented; first segment short; second larger, widened apically; third about as long as wide, half as long as second; fourth cylindrical, slightly narrowed apically, almost as wide and a little longer than second. Inner lobe of maxilla narrow, at apex membranous and ciliate, with a few short teeth internally. Outer lobe of maxilla broad, at apex membranous and ciliate. Ligula large, transverse, composed of two widely diverging membranous lobes which are ciliate on the outer margin, outer angles rounded. Labial palpi three-segmented, segments of nearly equal width, the first two transverse, the last twice as long as wide. Prostheca as long as labial palpi, densely ciliate internally. Gular sutures approximate, parallel throughout most of their length. Infraorbital carina lacking.

**Thorax:** Pronotum slightly narrowed at base. Prosternum well-developed, slightly tumid centrally, its process short and pointed, not extending between the coxae. Lateral prosternal suture distinct. Prosternal epimera delimited from the hypomera by a weak, curved line. Mesosternum short; its process long, very slender, pointed, extending more than three-fourths of the distance between the coxae where it meets the short, bluntly pointed process of the metasternum<sup>3</sup>. Trochantin prominent, narrow. Metasternum elongate. Scutellum visible. Elytra striate, the epipleuron delimited by a carina. Anterior coxae small, somewhat transverse, contiguous, open behind. Middle coxae small, narrowly separated by the processes of the meso- and metasternum<sup>3</sup>. Posterior coxae transverse with a lateral posterior expansion. Anterior and middle tibiae spinose externally, posterior unarmed except at apex. Tarsi five-segmented, the first four segments very short, the last a little longer than the first four together, enlarged apically.

**Abdomen:** Paratergites present on the first five visible segments. Tergites not impressed. First visible sternite with a small keel between the coxae. External sexual differentiation feeble or lacking.

**Distribution:** This is a small genus with three nearctic species, two European species, four Japanese species and one species described from India. Two new genera have recently been erected for two closely related New Zealand species previously placed here. The species are found under bark of trees.

**Notes:** Males of this genus are distinguished from the females by a long, prominent tooth on the external margin of the mandibles. Many of the males also have a forwardly directed horn on each side of the front margin of the head above the eyes. These cephalic horns may be entirely lacking or of variable development among the individuals of each species.

#### Charhyphus Sharp

**Form:** Small, elongate, parallel sided, very depressed. Integuments finely punctured and alutaceous.

**Head:** Head as large as the pronotum, round, slightly narrowed behind the eyes to form a very broad neck. Eyes of moderate size, slightly prominent. Antennae in-

<sup>3</sup>In *Siagonium vittatum* Fauvel, a palaearctic species, the mesosternal process is short, not meeting the metasternal process. Consequently, the middle coxae are contiguous.

crassate, their fossae located under a slight ridge between the eyes and the bases of the mandibles. Clypeal area not delimited by a suture. Labrum transverse, divided into two evenly rounded lobes. Mandibles short, stout, abruptly hooked at the apex, each with a small median tooth internally, the right with several minute denticles between the median tooth and the tip. Maxillary palpi four-segmented; first segment short; second longer than wide, thickened apically; third similar to, but a little longer and slightly wider, than second; fourth two-thirds as long and half as wide as third, sub-cylindrical, slightly narrowed to the truncate apex. Inner lobe of maxilla narrow, tapered and hooked at apex, inner margin with a row of setae. Outer lobe of maxilla narrower and slightly longer than inner lobe, membranous at apex, with a row of fine, long cilia internally. Ligula semicircular with two knob-like processes at tip. Labial palpi three-segmented; first segment widest, about twice as long as wide; second a little narrower, slightly longer than wide; third as long as first and about half as wide, cylindrical. Gular sutures moderately separated anteriorly, widely divergent behind. Infraorbital carina lacking.

*Thorax:* Prosternum well-developed, its process very short and pointed. Lateral prosternal suture distinct. Prosternal epimera not delimited by a suture. Trochantin well-developed, elongate, triangular, divided by a longitudinal carina. Mesosternum moderate, its process narrow, acute, extending about three-fifths of the distance between the coxae where it meets the stout, narrowly rounded process of the metasternum. Metasternum large. Elytra quadrate, with discal striae; epipleura delimited by a carina. Anterior coxae small, globose, contiguous. Middle coxae longer than anterior, globose, narrowly separated. Posterior coxae triangular. Tibiae finely pubescent. Tarsi five-segmented; first four segments short and subequal, last segment longer than the first four together. Anterior tarsi slightly thickened and densely pubescent beneath.

*Abdomen:* First five visible segments with paratergites. Tergites not impressed. First visible sternite without a keel between the coxae.

*Distribution:* The species of this genus apparently are not rare under bark in the eastern section of the United States and Canada and Arizona.

*Notes:* The lack of the small keel at the base of the abdomen between the coxae is very unusual in this subfamily. This is the genus previously called *Trigites*, Herman (1972) united the two genera. He also removed the genus to Phloeocharinae which is not followed here because to do so would make identification much more difficult.

#### Trigonurus Mulsant

*Form:* Moderate-sized, stout, fusiform, with shining integuments, the elytra long, with coarsely punctured striae.

*Head:* Head much smaller than pronotum, suboval, inserted into the thorax without a distinct neck. Eyes moderate in size, somewhat prominent. Antennae elongate, their fossae located under a slight ridge between the eyes and the bases of the mandibles. Clypeal area delimited by an unimpressed, straight line between the antennae. Labrum transverse, broadly emarginate in front, with a ciliate, membranous lobe on each side. Mandibles simple, short stout, with a membranous area at the base internally. Maxillary palpi four-segmented; first segment very small, second elongate, curved, thickened apically; third a little shorter than and about as wide as the second, slightly curved; fourth a little longer and a little wider than the second, tapering from before the middle to the bluntly pointed apex. Inner lobe of maxilla broad, membranous at apex with an internal apical brush of dense ciliae. Outer lobe of maxilla very similar to the inner, but considerably longer. Ligula large, transverse, largely membranous, broadly emarginate, outer angles well-defined. Labial palpi three-segmented, the first two short and transverse, the last cylindrical, slightly narrower and as long as the first two together. Gular sutures very approximate and parallel throughout most of their length. Mentum

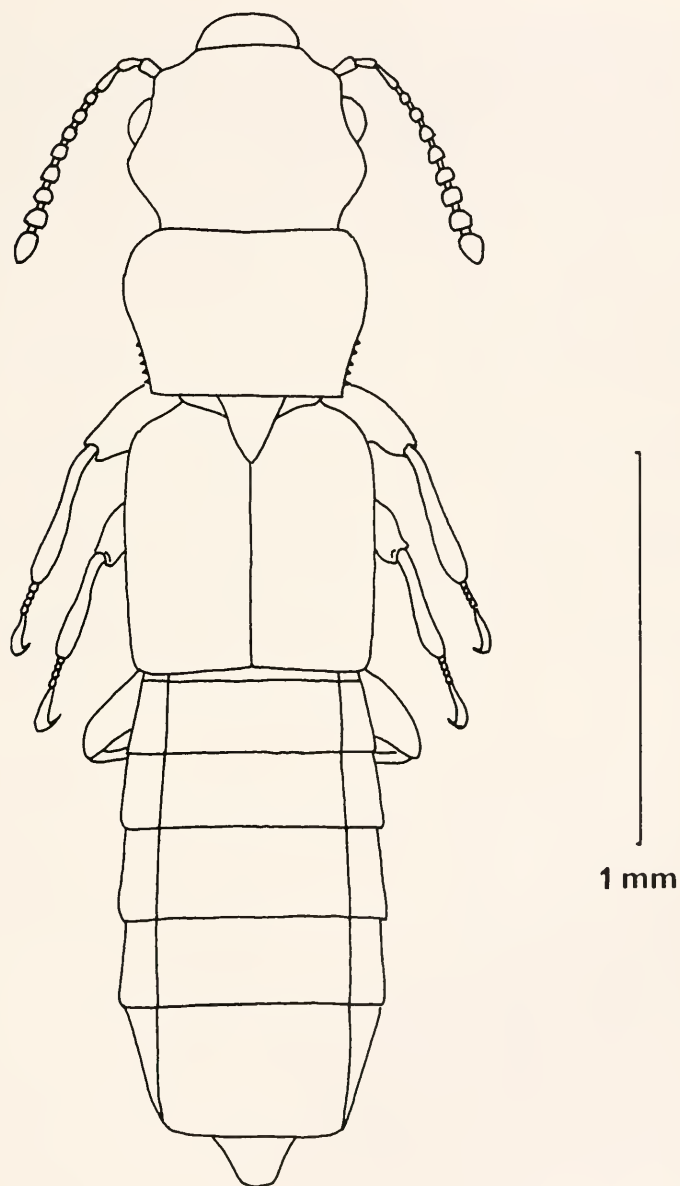


Figure 5: *Charhyphus picipennis* LeConte

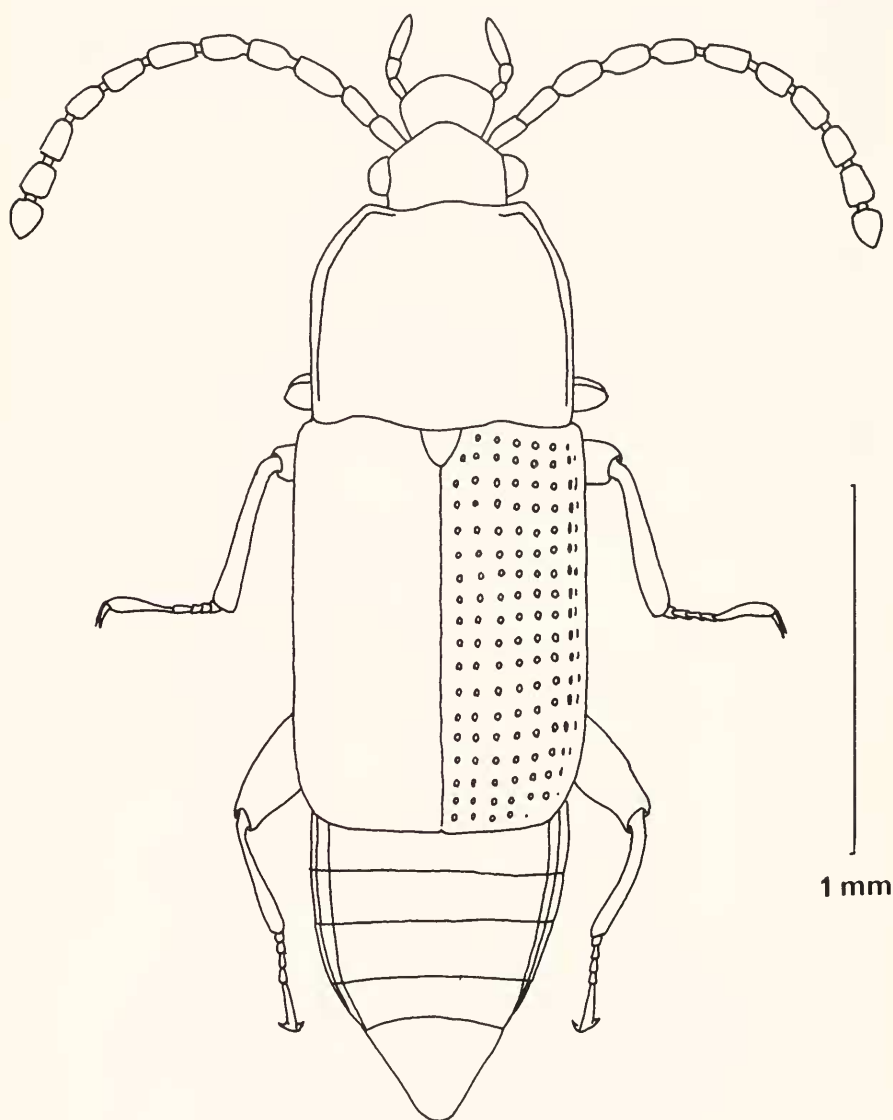


Figure 6: *Trigonurus sharpi* Blackwelder

transverse, the anterior margin slightly produced in the middle. Infraorbital carina lacking.

**Thorax:** Prosternum well-developed, its process extending more than three-fourths of the distance between the coxae, pointed, sometimes feebly longitudinally carinate. Lateral prosternal sutures distinct. Prosternal epimera not delimited from the hypomera by a suture but represented by large, triangular processes of the latter, extending somewhat behind the coxae. Trochantin well-developed, narrow, triangular. Mesosternum moderate, its process extending between the middle coxae for three-fourths of the distance where its truncated apex meets the broadly truncated process of the metasternum. Metasternum elongate. Elytra elongate, covering part of the abdomen, striate. Epipleura delimited by a distinct carina. Anterior coxae separate, small, globose, separated from the hypomera by about their width. Middle coxae well-separated, larger than the anterior, globose. Posterior coxae triangular, the posterior margin of the metasternum emarginate each side above their bases. Tibiae finely pubescent. Tarsi with the first four segments short, sub-equal, the last nearly as long as the first four together.

**Abdomen:** Paratergites present on the first five visible segments. Tergites not impressed. First sternite with two long, widely diverging carina which are united between the coxae. External sexual differences very feeble.

**Distribution:** Besides our seven species which range from British Columbia to middle California, two species are known from the palearctic region, one of which is confined to a limited area of the mountains of southern Europe, the other to the Caucasus. The species are found under the bark of dead coniferous trees.

**Notes:** This genus has been revised twice in recent years, by Van Dyke in 1934 and by Blackwelder in 1941, each of whom added a single new species to our list. One other species has since been described by Hatch in 1957.

#### *Zalobius* LeConte

**Form:** Moderate sized, stout, with the abdomen pointed. Integuments roughly sculptured, the pronotum and elytra with prominent longitudinal carinae.

**Head:** Head smaller than the pronotum, abruptly constricted at base to form a well-defined neck. Eyes moderate, not very prominent. Antennae incrassate, their fossae located between the eyes and the bases of the mandibles under a distinct ridge. Clypeal area delimited by a strong carina. Labrum with the anterior margin arcuate and provided with several short, blunt denticles. Mandibles heavy in *serricollis*, long, slender, arcuate in *spinicollis*, each with a median internal tooth. Maxillary palpi four-segmented; first segment short; second elongate, curved, widest at apex; third one-half as long as second, a little longer than wide; fourth a little longer than second, widest before the middle, then gradually narrowed to the rounded apex. Inner lobe of maxilla shorter than outer, each at apex membranous and with a dense brush of long cilia. Ligula small, entire, membranous with two or three chitinous rods. Labial palpus three-segmented; the first segment a little longer than wide, thickened apically; second a little longer and much wider than first, bulbous toward the apex, almost as wide as long; third cylindrical, about as long as and less than half as wide as second, slightly narrowed at apex. Paraglossae as long as first segment of labial palpi, with a dense comb of long cilia internally. Gular sutures very approximate at the middle, slightly divergent ahead and behind. Mentum quadrangular, anterior margin straight. Infraorbital carina lacking.

**Thorax:** Pronotum longitudinally carinate. Prosternum well-developed, its process short and acute. Lateral prosternal sutures distinct. Prosternal epimera not delimited by a suture. Trochantin small, narrow, triangular. Mesosternum moderate, its process

pointed and extending about halfway between the coxae; in *spiniollis* feebly carinate. Metasternum long, its process short, pointed, not meeting the mesosternal process. Elytra quadrate, longitudinally carinate; epipleura delimited by a distinct carina. Scutellum very small. Anterior coxae contiguous, small, globose; slightly elongate in *spiniollis*. Middle coxae contiguous, small, globose; slightly elongate in *spiniollis*. Posterior coxae small, triangular, the posterior margin of the metasternum emarginate each side above the bases of the coxae. Tibiae without spines. Tarsi strongly pubescent, particularly beneath, five-segmented; first segment a little longer than wide; next three progressively narrower and shorter; fifth a little longer than first, narrowed at base, at apex about as wide as fourth.

**Abdomen:** Paratergites present on first five visible segments. Tergites not impressed. First visible sternite with a short keel between the posterior coxae. External sexual differences very feeble.

**Distribution:** Two species are known, each of which is found from British Columbia to middle California. They are usually found in leaf litter.

**Notes:** This genus, and *Asemobius* appear to be closely related. They were originally placed in the Oxytelinae. They most certainly do not belong there, having no trace of a second abdominal sternite. They have small anterior coxae, a well-developed trochantin, and the first visible abdominal sternite has a short keel between the coxae, all characters which indicate a relationship to the Piestinae. They appear to be related to *Trigonurus*.

The two species can easily be distinguished by the shape of the pronotum.

**ABSTRACT** - A key is given to the genera of the subfamily Piestinae of America north of Mexico. A full generic description, distributional notes and a habitus illustration of a member of each of the following genera is presented: *Asemobius* Horn, *Zalobius* LeConte, *Trigonurus* Mulsant, *Charhyphus* Sharp, *Hypotelus* Erichson, *Piestus* Gravenhorst and *Siagonium* Kirby & Spence.

#### ACKNOWLEDGMENTS

We thank Jacques Helfer and Hugh B. Leech for loan and gift of specimens and other favors and Robert E. Orth for useful suggestions and criticism.

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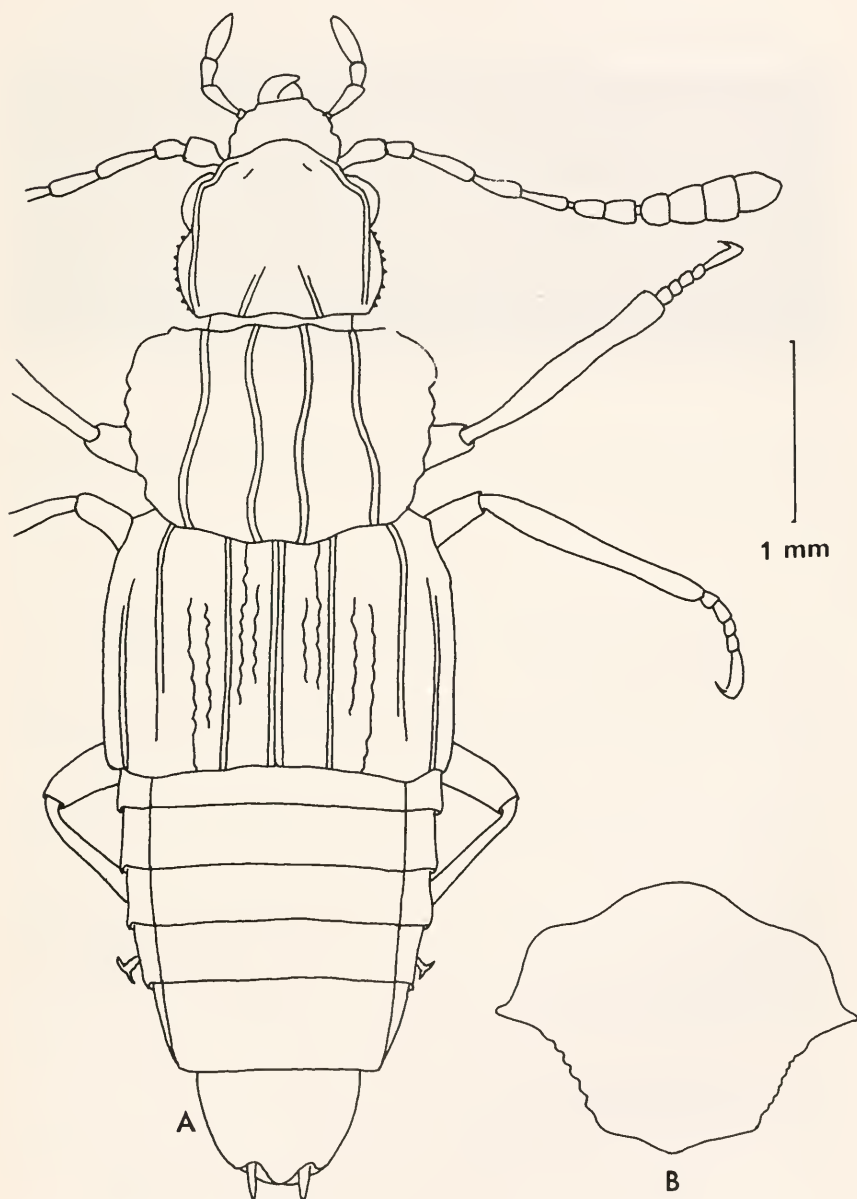


Figure 7B: *Z. spinicollis* LeConte, pronotum

Figure 7A: *Zalobius serricollis* LeConte.